



FORM PTO-1449 (Modified)

LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT

(Use several sheets if necessary)

ATTY. DOCKET NO.

GC-105

SERIAL NO.

071723.230

APPLICANT

John Mugler et al

FILING DATE

6-28-91

GROUP

2613

REFERENCE DESIGNATION

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
M.T.	AA	4836209	6-6-89	Nishimura	128	653	
M.T.	AB	4843321	6-27-89	Sotak	324	309	
M.T.	AC	4856528	8-15-89	Yang et al	128	653	
M.T.	AD	4895157	1-23-90	Nambu	128	653	
M.T.	AE	4901019	2-13-90	Wedeen	324	309	
M.T.	AF	4984573	1-15-91	Leunbach	128	653	
M.T.	AG	4986272	1-22-91	Riederer et al	128	653	
M.T.	AH	4991586	2-12-91	Mueller et al	128	653	
M.T.	AI	4801884	1-31-89	Oppelt et al	324	309	
M.T.	AJ	4830012	5-16-89	Riederer	128	653	
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FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO
	AL							
	AM							
	AN							
	AO							
	AP							

OTHER

ART (Including Author, Title, Date, Pertinent Pages, Etc.)

AR		See attached Form PTO-1449 (Modified) Other Art.						
AS								
AT								

EXAMINER

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DATE CONSIDERED

8/92

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 809; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of: Mugler et al
Serial Number : 07/723,230
Filed : 06/28/81
For : Three Dimensional Magnetic Resonance
Imaging
Group : 265

Commissioner of Patents and Trademarks
Washington, DC 20231

Dear Sir:

FORM PTO-1449 (MODIFIED) OTHER ART:

U. S. Patent 4,801,884

U. S. Patent 4,830,012

U. S. Patent 4,836,209

U. S. Patent 4,843,321

U. S. Patent 4,856,528

U. S. Patent 4,895,157

U. S. Patent 4,901,019

U. S. Patent 4,984,573

U. S. Patent 4,986,272

U. S. Patent 4,991,586

M.T.
Manual of Clinical Magnetic Resonance Imaging, (CMRI) by Heiken
et al., Raven Press, New York, 1991, Pages 24-39.

The Fourier Transform and its Applications, 2nd ed., McGraw-Hill, New York, 1978 by RN Bracewell.

M.T Spin Lattice Relaxation Time MEasurements in Two-Dimensional Nuclear Magnetic Resonance Imaging: Corrections for Plane Selection and Pulse Sequence, by B. R. Rosen, I. L. Pykett and T. J. Brady, Journal of Computer Assisted Tomography 8(2):195-199, April, 1984.

M.T Some Factors Involving Slice Shape Which Affect Contrast in Nuclear Magnetic Resonance (NMR) Imaging, by I. R. Young, G. M. Bydder, European Society of Cardiovascular Radiology (Paris) 28, 112-118, 1985.

M.T Variations in Slice Shape and Absorption as Artifacts in the Determination of Tissue Parameters in NMR Imaging, by I. R. Young, D. J. Bryant and J. A. Payne, Magnetic Resonance in Medicine 2, 355-389, 1985.

M.T Effect of Intersection Spacing on MR Image Contrast and Study Time, by J. B. Kneeland, MD, A. Shimakawa, BSEE, F. W. Wehrli, Ph.D., Radiology, 158:819-822, 1986.

M.T A Stimulated Echo Artifact from Slice Interference in Magnetic Resonance Imaging, by A. P. Crawley and R. M. Henkelman, Med. Phys. 14 (5), Sep/Oct 1987

M.T Effect of Multislice Interference on Image Contrast in T2- and T1- Weighted MR Images, by W. Kucharczyk, A. P. Crawley, W. M. Kelly and R. M. Henkelman, AJNR-9, May/June 1988

Diagnostic Significance of Interslice Gap and Imaging Volume in

M-T Body MR Imaging, by B. W. Schwaighofer, K. K. Yu, R. F. Mattrey,
AJR 153, September, 1989

M-T Advances in Magnetic Resonance, Academic Press by W.S. Warren, M.
Silver, Academic Press, 12, 248, 1988.

M-T Signal-to-Noise Ratio and Section Thickness in Two-dimensional
versus Three-dimensional Fourier Transform MR Imaging, by J.
Carlson, Ph.D., L. Crooks, Ph.D., D. Ortendahl, Ph.D., D. M.
Kramer, Ph.D., L. Kaufman, Ph.D., Radiology 166, 266-270, 1988.

M-T True Three-Dimensional Image Reconstruction by Nuclear Magnetic
Resonance Zeugmatography, by C-M Lai and P.C. Lauterbur, Phys.
Med. Biol., 1981, Vol. 26. No. 5, 851-856, 1981

M-T Clinical Relevance of Two Different Nuclear Magnetic Resonance
(NMR) Approaches to Imaging of a Low Grade Astrocytoma, by F. S.
Buonanno, I. L. Pykett, T. J. Brady, P. Black, P F. J. New, E. P.
Richardson, Jr., W. S. Hinshaw, M. Goldman, G. Pohost and J. P.
Kistler, Journal of Computer Assisted Tomography, 6(3):529-535,
June, 1982

M-T True Three-Dimensional Nuclear Magnetic Resonance Neuro-Imaging
in Ischemic Stroke: Correlation of NMR, X-ray CT and Pathology,
by I. L. Pykett, Ph.D., F. S. Buonanno, M.D., T. J. Brady, M.D.
and J. P. Kistler, M.D., Stroke, Vol. 14, No. 2, March-April,
1983.

M-T Temporomandibular Joint: Multislab, Three-dimensional Fourier
Transformation MR Imaging, by R. M. Wilk, D.D.S. and S. E. Harms,
M.D., Radiology, Volume 167, Number 3, 861-863, June, 1988.

M.T. FLASH Imaging, Rapid NMR Imaging Using Low Flip-Angle Pulses, by A. Haase, J. Frahm, D. Matthaei, W. Hanicke and K. D. Merboldt, Journal of Magnetic Resonance 67, 258-266, 1986.

M.T. Very Fast MR Imaging by Field Echoes and Small Angle Excitation, by P. Van Der Meulen, J. P. Groen, J. J. M. Cuppen, Magnetic Resonance Imaging, Volume 3, Number 3, 297-299, 1985.

M.T. Three Second Clinical NMR Images Using a Gradient Recalled Acquisition in a Study State Mode (GRASS)

M.T. The Application of Steady-State Free Precession in Rapid 2DFT NMR Imaging: FAST and CE-FAST Sequences, by M. Gyngell, Magn Reson Imaging 6, 415-419, 1988.

M.T. FISP - a new fast MRI Sequence, by A. Oppelt, R. Graumann, H. BarfuB, H. Fischer, W. Hartl, W. Schajor, Electromedica 54, 15-18, 1986.

M.T. Rapid Three-Dimensional MR Imaging Using the FLASH Technique by J. Frahm, A. Haase, D. Matthaei, J Comput Assist Tomogr 10, 363-368, 1986.

M.T. FLASH: Clinical Three-Dimensional Magnetic Resonance Imaging by V. M. Runge, M. L. Wood, D. M. Kaufman, et al., Radiographics 8, 947, 1988.

M.T. Three-Dimensional Magnetic Resonance Images of the Brain: Application to Neurosurgical Planning by X. Hu., Ph.D., K. K. Tan, Ph. D. et al, J. Neurosurg 72, 433-440, 1990.

M.T. Selective Three-Dimensional MR Imaging of the Spine by G. Galimore and S. Harms, J Comput Assist Tomogr 11, 124-128, 1987.

OTHER ART

m.T Spinal MR Imaging: Multiplanar Representation from a Single High Resolution 3D Acquisition by C. S. Sherry, S. E. Harms and W. K. McCroskey, J Comput Assist Tomogr 11, 859-862, 1987.

m.T Three-Dimensional Gradient-Recalled MR Imaging as a Screening Tool for the Diagnosis of Cervical Radiculopathy by J. S. Tsuruda, D. Norman, W. Dillon et al., AJR 154, 375-383, 1990.

m.T Three-Dimensional MR Imaging of the Knee Using Surface Coils by S. E. Harms and G. Muschler, J Comput Assist Tomogr 10, 773-777, 1986.

m.T Fast Three-Dimensional MR Imaging of the Knee: Comparison with Arthroscopy by R. L. Tyrell, K. Gluckert, M. Pathria, M. T. Modic, Radiology 166, 865-872, 1988.

m.T MR Imaging of the Knee: Preliminary Results with a 3DFT GRASS Pulse Sequence by C. E. Spritzer, J. B. Vogler, S. Martinez, et al., AJR 150, 597-603, 1988.

m.T Meniscal Abnormalities of the Knee: 3DFT fast-scan GRASS MR Imaging by A. M. Hagga, J. W. Froelich, D. O. Hearshen and K. Sadasivan, AJR 150, 1341-1344, 1988.

m.T MR Imaging of the Knee: Comparison of Three-Dimensional FISP and Two-Dimensional Spin-Echo Pulse Sequences by S. L. Solomon, W. G. Totty and J. K. Lee, Radiology 173, 739-742, 1989.

m.T New Method for Fast MR Imaging of the Knee by S. E. Harms, D. P. Flamig, C. F. Fisher and J. M. Fulmer, Radiology 173, 743-750, 1989.

Fast Field Echo Imaging: An Overview and Contrast Calculation by

M.T. P. van der Meulen, J. P. Groen, A. M. C. Tinus and G. Bruntink,
Magn Reson Imaging 6, 355-368, 1988.

A Comparison of Fast Spin Echo and Gradient Field Echo Sequences

M.T. by J. A. Tkach and E. M. Haacke, Magn Reson Imaging 6, 373-389,
1988.

Artifacts Due to Residual Magnetization in Three-Dimensional Mag-

M.T. netic Resonance Imaging by M. L. Wood and V. M. Runge, Med Phys
15, 825-831, 1988.

Transverse Coherence in Rapid FLASH NMR Imaging by J. Frahm, W.

M.T. Hanicke and K-D Merboldt, J Magn Reson 72, 307-314, 1987.

Optimization of Spoiler Gradients in FLASH MRI by M. L. Wood, M.

M.T. Silver and V. M. Runge, Magn Reson Imaging 5, 455-463, 1987.

Elimination of Transverse Coherences in FLASH MRI by A. P.

M.T. Crawley, M. L. Wood and R. M. Henkelman, Magn Reson Med 8, 248-
260, 1988.

Elimination of the Steady State Transverse Magnetization in Short

M.T. TR Imaging by Y. Zur, P. Bendel, "Book of Abstracts", Society of
Magnetic Resonance in Medicine, 6th Annual Meeting, 440, 1987.

Spoiling of Transverse Coherences without Spoiler Gradients by Y.

M.T. Zur, M. L. Wood, L. J. Neuringer, "Book of Abstracts", Society of
Magnetic Resonance in Medicine, 9th Annual Meeting, 31, 1990.

An Analysis of RF Phase Shift Spoiling and Its Effect on Contrast

M.T. by J. B. Murdoch, "Works-in-Progress", Society of Magnetic
Resonance in Medicine, 9th Annual Meeting, 1305, 1990.

OTHER ART

M.T. UltraFast Spoiled Gradient Recalled (SPGR) Image Acquisition by T. K. F. Foo, M. A. Bernstein, A. E. Holsinger et al, "Works-in-Progress", Society of Magnetic Resonance in Medicine, 9th Annual Meeting, 1308, 1990.

M.T. Rapid 3D Spin-Echo Imaging Using Large Flip Angle Excitation by J. P. Mugler and J. R. Brookeman, Magn Reson Imaging 6(S1), 53, 1988 (abstract)

M.T. Multi-Planar Image Formation Using NMR Spin Echos by P. Mansfield, J Phys C 10, L55, 1977.

M.T. Reduction of MR Imaging Time by the Hybrid Fast-Scan Technique by E. M. Haacke, F. H. Bearden, J. R. Clayton and N. R. Linga NR, Radiology 158, 521-529, 1986.

M.T. RARE Imaging: A Fast Imaging Method for Clinical MR by J. Henning, A. Nauerth and H. Friedburg, Magn Reson Med 3, 823-833, 1986.

M.T. Ultra-High-Speed Inversion Recovery Echo Planar MR Imaging: Technique and Application by M. K. Stehling, R. J. Ordidge and R. Coxon, et al., Radiology 169(P), 377, 1988 (abstract).

M.T. Inversion-Recovery Echo-Planar Imaging (IR-EPI) at 0.5T by M. K. Stehling, R. J. Ordidge, R. Coxon R and P. Mansfield, Magn Reson Med 13, 514-517, 1990.

M.T. Dynamic Contrast-Enhanced Perfusion Studies of the Brain with Snapshot FLASH by D. A. Finelli, B. Kiefer, M. Deimling et al., Radiology 173(P), 42, 1989 (abstract).

W.T. Evaluation of First-Pass Cardiac Perfusion with Instant MR Imaging by D. J. Atkinson, D. Burstein and R. R. Edelman, Radiology 173(P), 358, 1989 (abstract).

W.T. Cardiac NMR Imaging Using Snapshot FLASH NMR by A. Haase, D. Matthaei, D. Henrich et al., "Book of Abstracts", Society of Magnetic Resonance in Medicine, 8th Annual Meeting, 56, 1989.

W.T. Snapshot FLASH Imaging: Cardiac Applications by D. A. Finelli, B. Kiefer, G. Lenz, et al., Radiology 173(P), 275, 1989 (abstract).

W.T. "Snapshot-FLASH" Imaging of the Liver by E. E. de Lange, J. P. Mugler III, S. B. Gay et al., Magn Reson Imaging 8(S1), 52, 1990 (abstract).

W.T. Breath-Hold Abdominal STIR and T2-Weighted Imaging Using an Interleaved Ultrafast Gradient-Echo Sequence by R. R. Edelman, D. J. Atkinson, B. Wallner B et al., "Works in Progress", Society for Magnetic Resonance Imaging, 8th Annual Meeting, 35, 1990.

W.T. Sequential Inversion Recovery Snapshot-FLASH by U. Bottcher, D. Norris, D. Leibfritz, Magn Reson Imaging 8(S1), 16, 1990 (abstract).

W.T. Improving Image Quality in Snapshot FLASH and 3D MP RAGE Sequences by Employing Reordered Phase Encoding by J. P. Mugler III, T. A. Spraggins, "Works-in-Progress" Society of Magnetic Resonance in Medicine, 9th Annual Meeting, 1310, 1990.

W.T. Fast Three-Dimensional Snapshot FLASH MR Studies by D. Henrich, A. Haase and D. Matthaei, Radiology 173(P), 289, 1989 (abstract).

W.T. Three-Dimensional Magnetization-Prepared Rapid Gradient-Echo Imaging (3D MP RAGE), J. P. Mugler III and J. R. Brookeman, Magn Reson Med 15, (152-157), 1990.

W.T. Inversion Recovery Snapshot FLASH MR Imaging by A. Haase, D. Matthaei, R. Bartkowski et al., J Comput Assist Tomogr 13, 1036-1040, 1989.

W.T. Snapshot FLASH MRI, and Applications to T1, T2, and Chemical-Shift Imaging by A. Haase, Magn Reson Med 13, 77-89, 1990.

W.T. Ultrafast Measurement of T1- and T2-weighted Images with "SNAPSHOT"-FLASH by B. Kiefer, M. Deimling and D. Finelli, "Book of Abstracts", 8th Annual Meeting of the Society of Magnetic Resonance in Medicine, 1989, p 367.

W.T. Driven Equilibrium Fourier Transform Spectroscopy. A New Method for Nuclear Magnetic Resonance Signal Enhancement by E. D. Becker, J. A. Ferretti, T. C. Farrar, J Am Chem Soc 91, 7784-7785, 1969.

W.T. Cooperative T1 and T2 Effects on Contrast and T2 Sensitivity with Improved Signal to Noise Using a New Driven Inversion Spin Echo (DISE) Sequence by T. E. Conturo, A. H. Beth, R. M. Kessler et al., "Book of Abstracts", Society of Magnetic Resonance in Medicine, 6th Annual Meeting, 807, 1987.

W.T. Respiratory Ordered Phase Encoding (ROPE): A Method for Reducing Respiratory Motion Artefacts in MR Imaging by D. R. Bailes, D. J. Gilderdale, G. M. Bydder et al., J Comput Assist Tomogr 9, 835-838, 1985.

u-T. Algorithms for Minimization without Derivatives by R. P. Brent,
Prentice Hall, Englewood Cliffs, New Jersey, 1973.

u-T- The State of the Art in Numerical Analysis by D.A.H. Jacobs,
Academic Press, London, 1977.